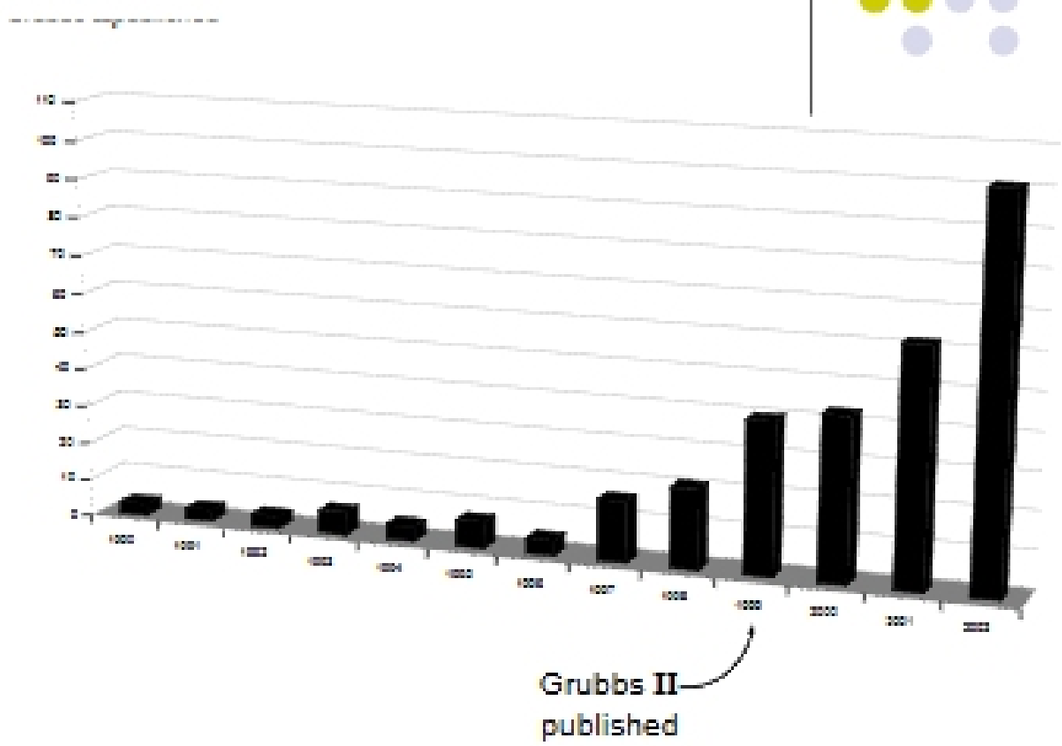
# *I. Basic Principles*

## I-M. Alkene Metathesis

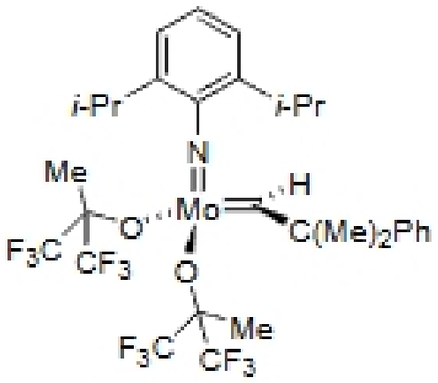



### Ring-closing metathesis


### Cross metathesis

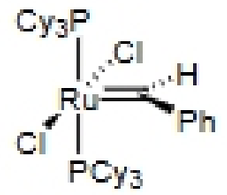

### Ring-opening metathesis

# The Catalysts




Schrock, R. R.; Murdzek, J. S.; Bazan, G. C.; Robbins, J.; DiMare, M.; O'Reagan, M. *J. Am. Chem. Soc.* **1990**, *112*, 3875

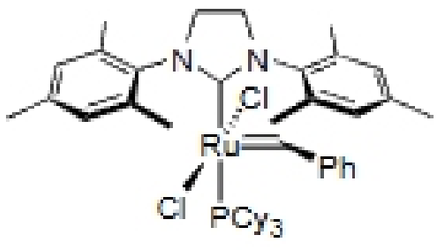
Schrock I




$Cl_2(PCy_3)_2Ru{=}CHPh$

Schwab, P.; France, M. B.; Ziller, J. W.; Grubbs, R. H. *Angew. Chem. Int. Ed. Engl.* **1995**, *34*, 2039

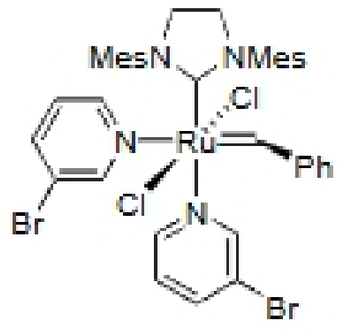
Grubbs I




$(H_2IMes)(PCy_3)Cl_2Ru{=}CHPh$

Scholl, M.; Ding, S.; Lee, C. W.; Grubbs, R. H. *Org. Lett.* **1999**, *1*, 953

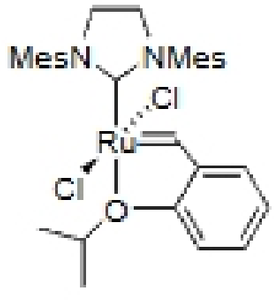
Grubbs II




$(H_2IMes)(3\text{-Br-py})_2Cl_2Ru{=}CHPh$

Love, J. A.; Morgan, J. P.; Trnka, T. M.; Grubbs, R. H. *Angew. Chem. Int. Ed.* **2002**, *41*, 4035

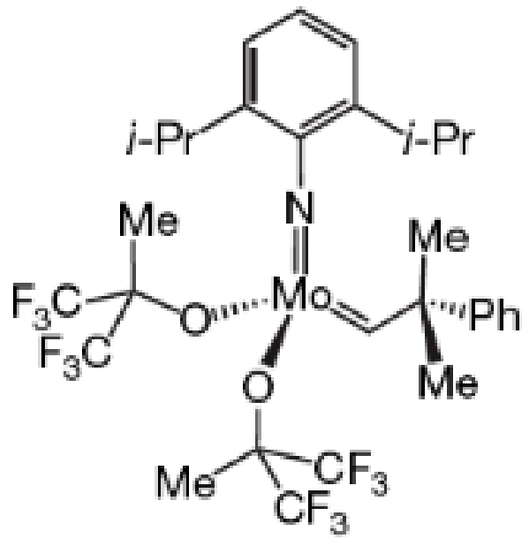
Grubbs III

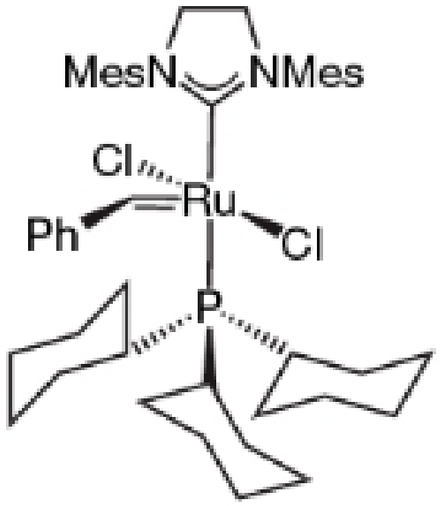


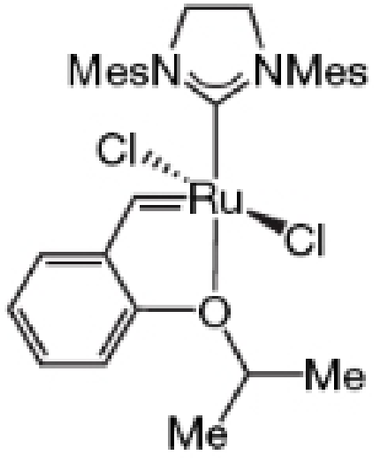

Kingsbury, J. S.; Harrity, J. P. A.; Hoveyda, A. H. *J. Am. Chem. Soc.* **1999**, *121*, 791

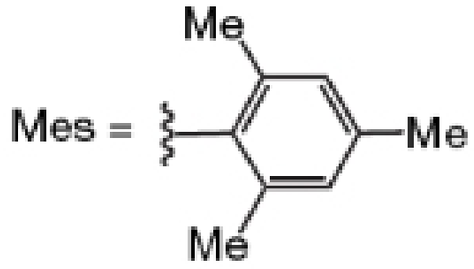
Green Grubbs

## Achiral olefin metathesis catalysts

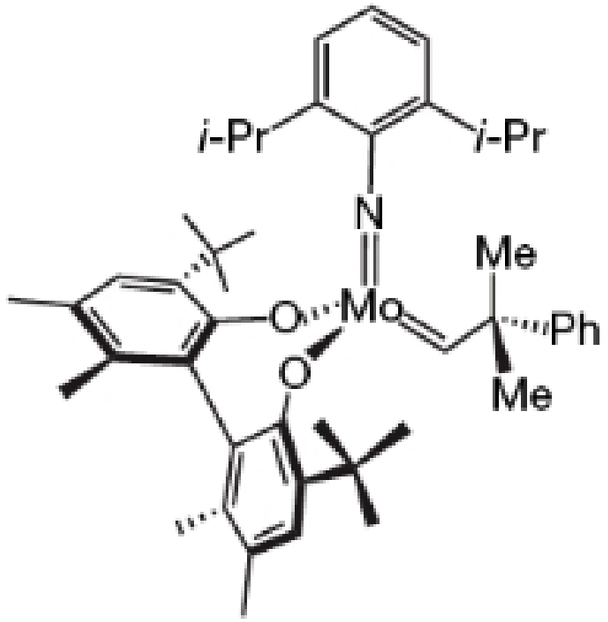


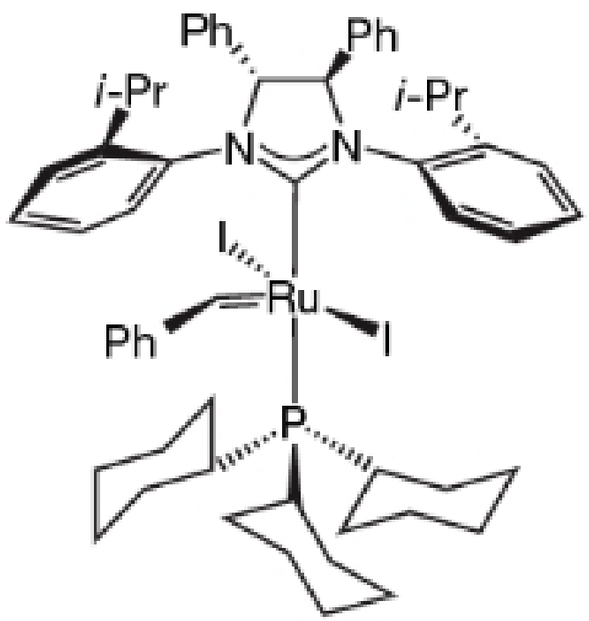



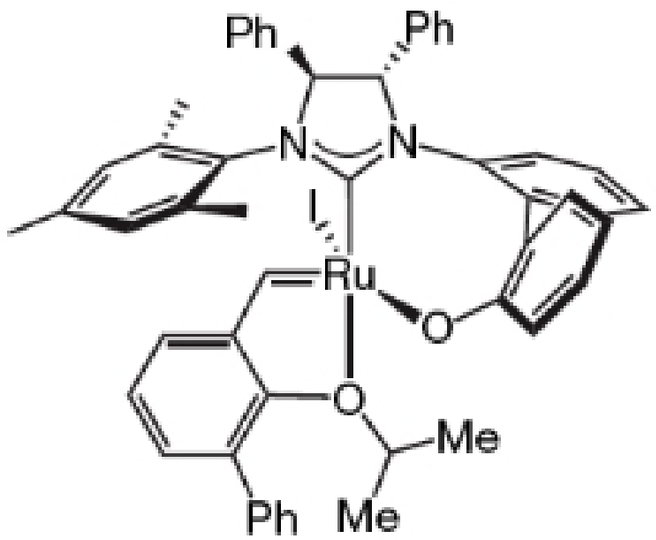




## Chiral olefin metathesis catalysts




Hoveyda, A. H.; Zhugralin, A. R., "The remarkable metal-catalysed olefin metathesis reaction." *Nature* **2007**, *450*, 243-251.